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(54) **SYSTEMS AND METHODS FOR PERFORMING COMMANDS IN A VEHICLE USING SPEECH AND IMAGE RECOGNITION**

(71) Applicant: **NVIDIA Corporation**, Santa Clara, CA (US)

(72) Inventors: **Sumit Bhattacharya**, Pune (IN); **Jason Roche**, Santa Clara, CA (US); **Niranjan Avadhanam**, Saratoga, CA (US)

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(57) **ABSTRACT**

Systems and methods are disclosed herein for implementation of a vehicle command operation system that may use multi-modal technology to authenticate an occupant of the vehicle to authorize a command and receive natural language commands for vehicular operations. The system may utilize sensors to receive data indicative of a voice command from an occupant of the vehicle. The system may receive second sensor data to aid in the determination of the corresponding vehicular operation in response to the received command. The system may retrieve authentication data for the occupants of the vehicle. The system authenticates the occupant to authorize a vehicular operation command using a neural network based on at least one of the first sensor data, the second sensor data, and the authentication data. Responsive to the authentication, the system may authorize the operation to be performed in the vehicle based on the vehicular operation command.